

Breakout Session 3

Non Hex Cr Treatments for IVD/Electroplated Al, Zn, Zn Alloy Coatings

By:
Steve Gaydos
And
Lorraine Wass
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Treatments for IVD/Electroplated Al

- Metalast TCP HF Qualified on Alumiplate
 - 25 to 50% at RT
 - 25% at 90 F
- All MIL-DTL-81706, Ty II TCP Materials Should Work on Al Coatings
 - Pure (99% Aluminum) to Treat with TCP
 - Henkel
 - CST SurTec
 - Luster-On
 - Metalast

Treatments for IVD/Electroplated Al

- Other Non TCPs That Offer Corrosion Resistance
 - Iridite NCP (Meets Ty II, Class 3)
 - Alodine 2000 (TD-3095 Seal)
 - Sanchem 3300 + 3400 Permanganate – Silicate Process
- Other Non-TCPs With Good Paint Adhesion Only
 - Boegel, Alodine 5700, PreKote
- Anodize or Oxide Coatings
 - Ty IC (BSAA), II (SAA), IIB (TSAA)
 - EC2

MIL-DTL-5541 Issues for Al Coatings

- MIL-DTL-5541 Still Required 2024 for Monthly Salt Spray
- Need to Change 5541 to Read Like MIL-A-8625 for Anodize
 - Corrosion Test with 2024 or Predominant Alloy Used That Month

Zn – Zn Alloy Coatings

- Many To Choose From – Mature Technology
 - Generations
 - I – Inorganics (Good for Zn Alloys)
 - II – III – Organics w / wo Cobalt
 - IV – Nanoparticles – Silica
 - Tailor for Needs – DoD Needs to Specify What They Want
 - Thickness, Elec Properties, Lubricity, Corrosion
 - Technology is Off the Shelf
 - Work with Vendors
 - SERDP – ESTCP Projects

Zn – Zn Alloy Coatings

- No Mil Spec Needed for These Treatments
 - Cd Plate Spec Required 96 hr SS
 - Need to Specify Additional Requirements
- DoD Should Select Non-Cobalt Versions for Evaluation
 - Avoid Future Regs

Installation of Non Hex Cr Systems

- Tighter Controls
 - pH, Temp, Concentration
- Process Less Forgiving
 - Pay Attention to Details
- Contamination
 - Remove Old Cr Tanks and Systems
- Non Hex Cr Costs Are Higher
 - Chemical Costs are Higher
 - Need to Use Technology to Extend Bath Life This Exists for Zn Alloy Systems

Issues for Insert of NonHex Into DoD

- **Non-Cr Primer**

- Need Hex Cr Surface Treatments to Make Non-Cr Primer Work
 - Progress Being Made But Not There Yet

Reliability of Non Hex Treatments

- Zn Alloys Treatments Very Reliable
 - Long History With Automotive Industry
- Al Coating Treatments Very Reliable (Not 2024)
- Touch-Up
 - Zn Alloy Coatings
 - Not Typically Done But Possible (Check with Brush Platers)
 - Al Coatings
 - Metalast is Brushable
 - CST SurTec Has Pen Applicators for Their Version
 - Henkel is Qualifying Alodine 871 Touch-N-Prep Pens

What Needed to Implement

- Al Coatings
 - Drop-In Replacement
 - Use MIL-DTL-81706, Ty II
 - Check out Non-Cr Primers
- Zn Alloy Coatings
 - Need to Repeat All Work Done with Hex Cr on Zn-Ni
 - Corr, Galvanic, HE, Re-HE, Paint, Fatigue??, . . .